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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/595,749	05/09/2006	Torsten Katz	12810-00248-US1	5897
23416 7590 06/05/2008 CONNOLLY BOVE LODGE & HUTZ, LLP P O BOX 2207 WILMINGTON, DE 19899				
EXAMINER				
VANOT, TIMOTHY C				
ART UNIT		PAPER NUMBER		
1793				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/595,749

Applicant(s)

KATZ ET AL.

Examiner

TIMOTHY C. VANOS

Art Unit

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 May 2006.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-20 is/are rejected.
7) ☒ Claim(s) 1 and 9 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 09 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date May 9, 2006
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The information disclosure statement filed on May 9, 2006 does not fully comply with the requirements of 37 CFR 1.98(b) because all of the foreign patent references are missing. Since the submission appears to be *bona fide*, applicant is given **ONE (1) MONTH** from the date of this notice to supply the above mentioned omissions or corrections in the information disclosure statement. **NO EXTENSION OF THIS TIME LIMIT MAY BE GRANTED UNDER EITHER 37 CFR 1.136(a) OR (b).** Failure to timely comply with this notice will result in the above mentioned information disclosure statement being placed in the application file with the noncomplying information **not** being considered. See 37 CFR 1.97(i).

Specification

a) Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract **not exceed 150 words in length** since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

In this application, the abstract provided on the face of WO 2005/044955 A1 application document (which is evidently the abstract intended to be published) exceeds 150 words and is (therefore) too long.

- b) The specification is objected to because it lacks a brief description of each of the figures individually under the section header "Brief Description of the Drawings".
- c) The title of the invention and the abstract are objected to because they refer to the removal of the acidic species out of "liquids", whereas pg. 3 lns. 39-42 in the Applicants' specification sets forth that the invention contemplates the removal of acidic species out of natural gas, synthesis gas, coke oven gas, etc. These gases are not "liquids".

Claim Objections

- a) Claim 1 is objected to because it refers to the removal of the acidic species out of "liquids", whereas pg. 3 lns. 39-42 in the Applicants' specification sets forth that the invention contemplates the removal of acidic species out of natural gas, synthesis gas, coke oven gas, etc. These gases are not "liquids".
- b) Claim 1 is objected to because it is internally inconsistent. The preamble of claim 1 mentions the removal of acidic species out of "liquids", whereas step (a) in claim 1 mentions the removal of acidic species out of "fluids". The gases embraced by the scope of the term "fluid" are materially excluded by the term "liquids" set forth in the preamble of claim 1.
- c) In claim 9 the recitation of the second occurrence "H₂S" in the third line is redundant.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 3, 4, 12, 13 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- a) In claims 1, 3 and 12, the term "if appropriate" renders these claims vague and indefinite because it is not clear what conditions are required to render the features of the claims "appropriate". It may have been the Applicants' intention to utilize "optionally" language in lieu of "if appropriate".
- b) In claims 3 and 12, the term "principally" renders the claims vague and indefinite because it is not clear why this term is needed and exactly how it is intended to further limit the claim language.
- c) In claim 4, 13 and 14, the recitation of the specific species "acetylmorpholine" and "N-formylmorpholine" following the generic genus "aliphatic acid amides" renders the claims vague and indefinite because it is not clear if the claim is further limited to these exemplary species or not. Examples are properly set forth in the specification, rather than the claims.

Claim Rejections - 35 USC § 103

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The person having ordinary skill in the art has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in this application reasonably reflect this level of skill.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Pat. 4,853,012 to Batteux et al. in view of U. S. Pat. 4,336,233 to Appl et al. and U. S. Pat. 5,562,891 to Spencer et al.

The Batteux patent describes a process for removing hydrogen sulfide and/or carbon dioxide and mercaptans out of a gas (such as natural gas) that is at a pressure that may broadly range from 10 to 100 bars (please col. 7 Ins. 5-8 and also col. 3 Ins. 24-29), comprising the steps:

feeding the contaminated gas into an absorption column (1) where the gas is counter-currently contacted with an absorption liquid (such as an aqueous solution of primary or secondary amines, for example monoethanolamine, etc. that may also be in an organic solvent such as sulfolane: col. 3 Ins. 12-16) so that the absorption solution sorbs and removes the acidic species out of the gas to produce a purified gas which is discharged via conduit (7) and an acid-loaded absorption solution which is discharged via conduit (8) (please see the figure and also col. 7 Ins. 5-37). *Applicants' claim 1 step (a), claims 3, 4, 9, 12, 13, 14;*

as a consequence, the purified gas discharged out of conduit (7) is separated from the acid-loaded absorption solution discharged via conduit (8). *Applicants' claim 1 step (b);*

the acid-loaded absorption solution is fed into the top of a regeneration column (2) where it is counter-currently stripped of its' acidic species by a rising stream of steam at a column pressure of 1 to 5 bars that was generated by boiling the aqueous absorption solution in a boiler (19) located toward the bottom of the regeneration

column (please see col. 7 Ins. 48-57 and col. 7 In. 68 to col. 8 In. 6) to thereby produce a regenerated absorption solution discharged via conduit (15) and a acid gas discharged via conduit (14). *Applicants' claim 1 step (c), claims 2, 6, 18, 19 and 20;*

passing the discharged, regenerated absorption solution through a heat exchanger (28, 48) where discharged, regenerated absorption is cooled and the incoming acid-loaded absorption solution is heated (please see col. 7 Ins. 57-65).

Applicants' claim 1 step (d), claims 7 and 8,

and

re-cycling the regenerated absorption solution back to absorption tower (1) via conduits (29, 32 and 35)(please see the figure). *Applicants' claim 1 step (e).*

Note that the Example on col. 8 Ins. 33-36 sets forth that the feed gas contains 0.5% hydrogen sulfide; 5% carbon dioxide, and 200 mg/Nm³ of methyl mercaptan and ethyl mercaptan. *Applicants' claim 10.*

The difference between the Applicants' claims and this Batteux patent is that Applicants' claims 5, 15, 16 and 17 set forth that the absorption solution comprises methyldiethanolamine and piperazine.

Claim 7 in the U. S. Pat. 4,336,233 to Appl et al. sets forth the use of an absorption solution comprising methyldiethanolamine and piperazine for the same claimed purpose of removing carbon dioxide and/or hydrogen sulfide out of a gas. Col. 7 Ins. 11-16 sets forth the advantages that the piperazine-containing absorption solution has an enhanced rate of absorption and an enhanced absorption capacity.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made *to have modified* the process described in the Batteux patent *by substituting* the methyldiethanolamine/piperazine absorption solution described in claim 7 in the Appl patent *in lieu of* the absorption solution used in the process of the Batteux patent, in the manner required by Applicants' claims 5, 15, 16 and 17, *because* of the taught advantage of Appl's absorption solution of having an enhanced rate of absorption and an enhanced absorption capacity, as set forth in col. 7 lns. 11-16 in the Appl patent.

The difference between the Applicants' claims and the Batteux patent is that Applicants' claim 11 sets forth that the acid gas stream (emitted from the regeneration column?) may be passed into the ocean.

The abstract of U. S. Pat. 5,562,891 to Spencer et al. sets forth that carbon dioxide may be stored in the ocean, evidently as a way of combating the gaseous carbon dioxide's "greenhouse" effect of increasing the global temperatures (please see col. 1 lns. 34-39).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made *to have modified* the process described in the Batteux patent *by feeding* the carbon dioxide-rich off-gas exiting the regeneration tower *into* the ocean, as set forth in Applicants' claim 11 and fairly suggested in the abstract of the Spencer patent, *because* of the expected advantage of reducing the concentration of "atmosphere-heating" gaseous carbon dioxide in the earth's atmosphere, as fairly taught in col. 1 lns. 34-39 in the Spencer patent.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIMOTHY C. VANOY whose telephone number is (571)272-8158. The examiner can normally be reached on Mon-Fri 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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